

**Environmental Protection Agency**

**§ 86.513-87**

dinitrophenylhydrazine (DNPH) derivatives using ultraviolet (UV) detection. The exhaust gas analytical system shall conform to the following requirements:

(1) The CL requires that the nitrogen dioxide present in the sample be converted to nitric oxide before analysis. Other types of analyzers may be used if shown to yield equivalent results and if approved in advance by the Administrator.

(2) The carbon monoxide (CO) NDIR analyzer may require a sample conditioning column containing CaSO<sub>4</sub>, or indicating silica gel to remove water vapor and containing ascarite to remove carbon dioxide from the CO analysis stream.

(i) If CO instruments which are essentially free of CO<sub>2</sub> and water vapor interference are used, the use of the conditioning column may be deleted, see §§ 86.522 and 86.544.

(ii) A CO instrument will be considered to be essentially free of CO<sub>2</sub> and water vapor interference if its response to a mixture of 3 percent CO<sub>2</sub> in N<sub>2</sub>

which has been bubbled through water at room temperature produces an equivalent CO response, as measured on the most sensitive CO range, which is less than 1 percent of full scale CO concentration on ranges above 300 ppm full scale or less than 3 ppm on ranges below 300 ppm full scale; see § 86.522.

(c) *Other analyzers and equipment.* Other types of analyzers and equipment may be used if shown to yield equivalent results and if approved in advance by the Administrator.

[54 FR 14544, Apr. 11, 1989]

**§ 86.513-87 Fuel and engine lubricant specifications.**

(a) Gasoline having the following specifications will be used by the Administrator in exhaust emission testing. Gasoline having the following specifications or substantially equivalent specifications approved by the Administrator, shall be used by the manufacturer for emission testing except that the lead and octane specifications do not apply.

Item designation	ASTM	Leaded	Unleaded
Octane, research, min .....	D2699 .....	100	93
Pb (organic), g/liter (g/U.S. gal.) .....	D3237 .....	<sup>1</sup> 0.026 (0.100 max)	<sup>1</sup> 0.013 (0.050 max)
Distillation Range: .....	D86.		
IBP, °C ( °F) .....	.....	23.9-35 (75-95)	23.9-35 (75-95)
10 pct. point, °C ( °F) .....	.....	48.9-57.2 (120-135)	48.9-57.2 (120-135)
50 pct. point, °C ( °F) .....	.....	93.3-110 (200-230)	93.3-110 (200-230)
90 pct. point, °C ( °F) .....	.....	148.9-162.8 (300-325)	148.9-162.8 (300-325)
EP, °C ( °F) .....	.....	212.8(415)	212.8(415)
Sulfur, wt. pct., max .....	D1266 .....	0.10	0.10
Phosphorus, g/liter (g/U.S. gal.), max .....	.....	0.0026 (0.01)	0.0013 (0.005)
RVP, KPa (psi) .....	D323 .....	55.2-63.4 (8.0-9.2)	55.2-63.4 (8.0-9.2)
Hydrocarbon composition:			
Olefins, pct., max .....	D1319 .....	10	10
Aromatics, pct., max .....	.....	35	35
Saturates .....	.....	( <sup>2</sup> )	( <sup>2</sup> )

<sup>1</sup> Maximum.  
<sup>2</sup> Remainder.

(b)(1) Gasoline and engine lubricants representative of commercial fuels and engine lubricants which will be generally available through retail outlets shall be used in service accumulation.

(2) For leaded fuel the lead content shall not exceed 0.100 gram lead per gallon leaded gasoline.

(3) Where the Administrator determines that vehicles represented by a test vehicle will be operated using gasoline of different lead content than that prescribed in this paragraph, he may consent in writing to use a gasoline with a different lead content.

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(4) The octane rating of the gasoline used shall be no higher than 4.0 research octane numbers above the minimum recommended by the manufacturer.

(5) The Reid Vapor Pressure of the fuel used shall be characteristic of the motor fuel during the season in which the service accumulation takes place.

(6) If the manufacturer specifies several lubricants to be used by the ultimate purchaser, the Administrator will select one to be used during service accumulation.

(c) The specification range of the fuels and engine lubricants to be used under paragraph (b) of this section shall be reported in accordance with § 86.416.

(d) The same lubricant(s) shall be used for both service accumulation and emission testing.

(e) Fuels not meeting the specifications set forth in this section may be used only with the advance approval of the Administrator.

[51 FR 24611, July 7, 1986, as amended at 52 FR 47869, Dec. 16, 1987]

§ 86.513-90 Fuel and engine lubricant specifications.

(a) Gasoline having the following specifications will be used by the Administrator in exhaust emission testing. Gasoline having the following specifications or substantially equivalent specifications approved by the Administrator, shall be used by the manufacturer for emission testing except that the octane specifications do not apply.

Item	ASTM	Value
Octane, research, minimum .....	D2699	96
Lead (organic):		
g/liter .....	D3237	<sup>1</sup> 0.013
(g/U.S. gal.) .....		<sup>1</sup> (0.050)
Distillation range:		
IBP:		
°C .....	D86	23.9-35
(°F) .....		(75-95)
10 pct. point:		
°C .....	D86	48.9-57.2
(°F) .....		(120-135)
50 pct. point:		
°C .....	D86	93.3-110
(°F) .....		(200-230)
90 pct. point:		
°C .....	D86	148.9-162.8
(°F) .....		(300-325)
EP:		
°C max .....	D86	212.8

Item	ASTM	Value
(°F) .....		(415)
Sulfur, weight percent, maximum .....	D1266	0.10
Phosphorus:		
g/liter, max .....	D3231	0.0013
(g/U.S. gal) .....		(0.005)
RVP, kPa (psi) .....	D323	55.2-63.4
		(8.0-9.2)
Hydrocarbon composition:		
Olefins, percent, maximum .....	D1319	10
Aromatics, percent, maximum .....	D1319	35
Saturates .....	D1319	Remainder

<sup>1</sup> Maximum.

(b)(1) Unleaded gasoline and engine lubricants representative of commercial fuels and engine lubricants which will be generally available through retail outlets shall be used in service accumulation.

(2) The octane rating of the gasoline used shall be no higher than 4.0 Research octane numbers above the minimum recommended by the manufacturer.

(3) The Reid Vapor Pressure of the fuel used shall be characteristic of the motor fuel during the season in which the service accumulation takes place.

(4) If the manufacturer specifies several lubricants to be used by the ultimate purchaser, the Administrator will select one to be used during service accumulation.

(c) Methanol fuel used for exhaust and evaporative emission testing and in service accumulation of methanol-fueled motorcycle vehicles shall be representative of commercially available methanol fuel and shall consist of at least 50 percent methanol by volume.

(1) Manufacturers shall recommend the methanol fuel to be used for testing and service accumulation in accordance with paragraph (c).

(2) The Administrator shall determine the methanol fuel to be used for testing and service accumulation.

(d) Other methanol fuels may be used for testing and service accumulation provided:

(1) They are commercially available, and

(2) Information, acceptable to the Administrator, is provided to show that only the designated fuel would be used in customer service, and

(3) Use of a fuel listed under paragraph (a)(3) of this section would have a detrimental effect on emissions or durability, and